1. A coated nanocrystal capable of light emission, comprising:

a core selected from the group consisting of CdX, where x = S, Se, Te, and mixtures thereof, said core being a member of a substantially monodisperse particle population; and

an overcoating of ZnY, where Y = S, Se, uniformly deposited thereon, said coated core characterized in that when irradiated the particles emit light in a narrow spectral range of no greater than about 60 nm at full width half max (FWHM).

2. A coated nanocrystal capable of light emission, comprising:

a core selected from the group consisting of CdX, where x = S, Se, Te, and mixtures thereof, said core being a member of a substantially monodisperse particle population; and

an overcoating of ZnY, where Y = S, Se, uniformly deposited thereon, said coated core characterized in that the nanocrystal exhibits less than a 10% rms deviation in diameter of the core.

3. The coated nanocrystal of claim 1, wherein the spectral range is not greater than about 40 nm at full width half max (FWHM).

4. The coated nanocrystal of claim 1, wherein the spectral range is not greater than about 30 nm at full width half max (FWHM).

5. The coated nanocrystal of claim 1, wherein the coated nanocrystal exhibits photoluminescence having quantum yields of greater than 30%.

6. The coated nanocrystal of claim 1, wherein the coated nanocrystal exhibits photoluminescence having quantum yields in the range of about 30 to 50%.

7. The coated nanocrystal of claim 2, wherein the coated nanocrystal exhibits less than a 5% rms deviation in size of the core.

8. The coated nanocrystal of claim 1 or 2, wherein the overcoating comprises one to two monolayers of ZnY.

9. The coated nanocrystal of claim 1, wherein the narrow spectral range is selected from the spectrum in the range of about 470 nm to about 620 nm.

10. The coated nanocrystal of claim 2, wherein the particle size of the core is selected from the range of about 20Å to about 125 Å.

11. The coated nanocrystal of claim 1 or 2, wherein the nanocrystal further comprises an organic layer on the nanocrystal outer surface.

12. The coated nanocrystal of claim 11, wherein the organic layer is comprised of moieties selected to provide compatibility with a suspension medium.

13. The coated nanocrystal of claim 11, wherein the organic layer is comprised of moieties selected to exhibit affinity for the outer surface of the nanocrystal.

~~14~~ 21. The coated nanocrystal of claim ~~13~~ 20, wherein the organic layer comprises a short-chain polymer terminating in a moiety having affinity for a suspending medium.

15. A method of preparing a coated nanocrystal capable of light emission, comprising:

2nd B Contd

18

introducing a substantially monodisperse first semiconductor core population and a precursor capable of thermal conversion into a second semiconductor material into a coordinating solvent,

wherein the coordinating solvent is maintained at a temperature sufficient to convert the precursor into the second semiconductor material yet insufficient to substantially alter the monodispersity of the first semiconducting core,

wherein the second semiconductor material has a band gap greater than the first semiconducting nanocrystal, and

whereby an overcoating of the second semiconductor material is formed on the first semiconducting nanocrystal.

16. The method of claim 15, further comprising:

monitoring the monodispersity of the nanocrystal during conversion of the precursor and overcoating of the first semiconductor nanocrystal.

17. The method of claim 15, wherein the is was lowered in response to a spreading of the size distribution as estimated from the absorption spectra.

18. The method of claim 15, wherein the temperature is increased in response to when monitoring indicates growth appears to stop.

19. The method of claim 15, wherein the first semiconductor crystal is selected from the group consisting of CdX, where X = S, Se and Te.

20. The method of claim 15, wherein the second semiconductor material is selected from the group consisting of ZnS, ZnSe, CdS and CdSe and mixtures thereof.

21. The method of claim 15, wherein the particle size of the core is in the range of about 20Å to about 125 Å.

22. The method of claim 15, wherein the nanocrystal further comprises an organic layer on the nanocrystal ~~outer~~ surface.

23. The method of claim 22, wherein the organic layer is obtained by exposing the nanocrystal to an organic compound having affinity for the nanocrystal surface, whereby the organic compound displaces the coordinating solvent.

ADD B7